AMENDED CLAIMS

[received by the International Bureau on 15 April 2005 (15.04.2005); original claims 54 (in part)-57 replaced by amended claims 54 (in part)-57]

there being a vent in said rotary valve at a point between said outlet and said inlet, in the direction in which said compartments are rotated, such that a compartment under pressure which has been emptied at said outlet and is returning to said inlet will be vented of pressure introduced when said inert gas is fed into said compartment under pressure, before the emptied compartment reaches said rotary valve inlet.

55. An apparatus comprising:

a carbonaceous feedstock reformer for generating syngas;

first conduit defining a flow path through which syngas flows;

a carbon dioxide separator located in said flow path downstream from said feedstock reformer;

an alcohol catalyzed reactor located in said flow path downstream from said carbon dioxide separator;

a gas separator for separating gas from liquid exiting said alcohol catalyzed reactor;

a methane reformer, and a second conduit connecting said gas separator to said methane reformer, whereby the gas stream and any methane therein, which is separated from liquid at said gas separator, is conveyed to said methane reformer;

a third conduit connecting said carbon dioxide separator to said methane reformer, whereby methane in said gas stream can be reacted with carbon dioxide to form carbon monoxide and hydrogen;

a fourth conduit connecting said methane reformer to one of said first conduit and said alcohol reactor.

56. The apparatus of claim 55 in which a fifth conduit extends from said gas separator back to said alcohol reactor for recycling said gas stream; and a diverter valve between said second and fifth conduit which is activated from time to time to divert gas from said fifth conduit to said second conduit.

57. The apparatus of claim 56 which includes a meter in said fifth conduit for measuring the methane content of gas therein; said diverter valve being operably connected to said meter, and operating in response to said meter sensing a particular level of methane to divert said gas to said second conduit.